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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Bruce M. Harper

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EXAMINER

EWALD, MARIA VERONICA

ART UNIT

PAPER NUMBER

1722

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No. 10/761,486	Applicant(s) HARPER ET AL.	
	Examiner Maria Veronica D. Ewald	Art Unit 1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 27-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 27-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

13. Claims 15 – 26 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on November 20, 2006.

Claim Rejections - 35 USC § 112

14. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Line 4 of claim 5 states "...a holder plate to receive the disk substrate..." Though line 5 of claim 5 has been corrected to delete the term "disk," *line 4 has not been corrected and thus, the term "disk substrate" still lacks sufficient antecedent basis.* The Examiner is interpreting the limitation as "the substrate." Correction of line 4 is required.

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 2, 4 – 5, 9, 12 – 14, and 27 – 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujii (U.S. 5,571,473). Fujii teaches an assembly comprising: a heater to pre-heat an embossable film, disposed above a substrate, to an approximate embossing temperature (item 31 – figure 1; column 2, lines 49 – 51, 63 – 67), a die assembly having an embossing foil to imprint the embossable film (item 4 – figure 1; column 3, lines 64 – 67; column 4, lines 1 – 5); and a heat tunnel disposed between the heater and the die assembly to maintain the approximate embossing temperature (item 35 – figure 1; column 3, lines 30 – 40, 45 – 58); wherein there is a transporting device for the substrate (figure 1).

With respect to claims 4 – 5 and 9, the reference further teaches that the transporting device is a servo slide (figure 1) and the servo slide comprises a frame; a holder plate to receive the substrate and at least two fingers to secure the substrate within the holder plate, the at least two fingers to maintain a precise position of the substrate (figure 1; column 3, lines 64 – 67; column 4, lines 1 – 5) and wherein there is a cooling station disposed near the die assembly (column 3, lines 64 – 67; column 4, lines 1 – 5).

With respect to claims 12 – 14, Fujii further teaches that the heat tunnel comprises an inductive heat tunnel (column 3, lines 1 – 15); wherein the heat tunnel comprises an IR heat tunnel (column 3, lines 30 – 40) and wherein the substrate comprises a disk (column 3, lines 64 – 67).

With respect to claims 27 – 30, Fujii teaches an assembly comprising: a means for pre-heating an embossable film disposed above a substrate to an approximate embossing temperature (item 31 – figure 1; column 2, lines 49 – 51, 63 – 67); and a means for transporting the substrate to an imprinting die assembly while maintaining the approximate embossing temperature (items 31 and 35 – figure 1; column 3, lines 15 – 30, 45 – 50); wherein the apparatus is further comprised of a means for centering the substrate relative to an embossing foil disposed within the imprinting die set (figure 1); wherein there are means for inspecting an embossed pattern on the embossed film and there is means for cooling the substrate (column 3, lines 65 – 67).

Claims 27 – 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakano, et al. (U.S. 6,482,279). Nakano, et al. teach an assembly comprising: means for pre-heating an embossable film disposed above a substrate to an approximate embossing temperature (column 8, lines 15 – 18); and means for transporting the substrate to an imprinting die assembly, having an embossing foil, while maintaining the approximate embossing temperature (column 2, lines 45 – 65; column 6, lines 32 – 50; column 8, lines 20 – 40); wherein there are means for centering the substrate relative to an embossing foil disposed within the imprinting die set (column 7, lines 25 – 40); wherein there are means for inspecting an embossed pattern on the embossable film (column 10, lines 50 – 65); wherein there are means for cooling the substrate (column 6, lines 60 – 65; column 8, lines 30 – 40).

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 2, 4 – 5, 8 – 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakano, et al. (U.S. 6,482,279) in view of Ho, et al. (U.S. 2004/0238972). Nakano, et al. teach a heater to pre-heat an embossable film, disposed above a substrate, to an approximate embossing temperature (column 8, lines 15 – 18); a die assembly having an embossing foil to imprint the embossable film (column 3, lines 50 – 57). Furthermore, Nakano, et al. teach that there is a cooling station disposed near the die assembly (column 6, lines 60 – 67); the assembly further includes visual inspection means (column 10, lines 50 – 60) and wherein the assembly is used to imprint the embossable film for the production of an optical disk, wherein the substrate is a disk (column 1, lines 10 – 25). However, Nakano, et al. do not teach the presence of a heat tunnel nor a transporting device for the substrate, the transporting device comprised of a servo slide including a frame, a holder and at least two fingers to secure the substrate.

In a method to encapsulate a substrate used for semiconductor manufacturing, Ho, et al. teach the use of a heating tunnel disposed prior to molding to maintain the substrates at the appropriate molding temperature (paragraph 0016). The use of the heating tunnel maintains the substrate at the embossable temperature so that it does

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not cure or harden prematurely before molding. Furthermore, Ho, et al. teach a transport device for the substrate which is comprised of indexing means such that the substrate is seamlessly transported from the heating tunnel to the molding assembly without any additional mechanisms or equipment. The indexing means can be comprised of a clamp or pin indexer, which includes a clamping device to grip a side of the substrate and move it along the traveling path or a pin corresponding to a pinhole in the substrate to push it along the travel path. This simplifies and streamlines the molding process (paragraph 0021).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to include with the die assembly of Nakano, et al., the heating tunnel and transporting device of Ho, et al. for the purpose of ensuring that the substrate is maintained at the appropriate temperature prior to embossing or molding, such that it does not cure prematurely and for transporting the substrate seamlessly from pre-heating to molding without the use of any additional mechanisms or equipment, which results in an optimized molding or embossing process.

Claims 3 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakano, et al. in view of Ho, et al. and further in view of Chou (U.S. 6,482,742).

Nakano, et al. and Ho, et al. teach the characteristics previously described but do not teach that the transport device is a vacuum chuck attached to a robotic arm and that the die assembly is used to imprint the embossable film for production of a semiconductor device.

In a method to imprint the thin film covering a substrate using a mold with a plurality of protruding features, Chou teaches that the substrate is transported onto the mold using a vacuum chuck (column 6, lines 40 – 45). The chuck has a plurality of small holes on its surface, such that it is connected to an air source or vacuum. The creation of a vacuum allows the substrate or the silicon wafer, as described by Chou, to be firmly adhered to the chuck surface (column 6, lines 45 – 55). This reads on the Applicant's claims that the transport device is a vacuum chuck attached to a robotic arm and that the die assembly is used to imprint the embossable film for production of a semiconductor device.

Therefore, it would have been obvious to one of ordinary skill in the art to configure the assembly of Nakano, et al. with the transport device and heat tunnel of Ho, et al., further configured with the vacuum chuck of Spengler to imprint the film of a semiconductor device, for the purposes of ensuring that the substrate is firmly adhered to the transport device and for imprinting a silicon wafer used in a semiconductor device.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakano, et al. in view of Ho, et al. and further in view of Amo (U.S. 5,888,433). Nakano, et al. and Ho, et al. teach the characteristics previously described but do not teach the specifics of the die assembly.

In a method to properly center two substrates used to form a storage disk such as a CD or DVD, wherein the substrate is an optical recording disk, Amo teaches the use of a holding table with a disk-shaped receiver supported by struts and a boss which

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is inserted and disposed in a central hole (column 5, lines 35 – 40). In addition, the struts for supporting the receiver are fitted to a base (column 5, lines 40 – 45). The boss or elongated portion protrudes through an inserted substrate and substantially aligns the substrates (column 7, lines 15 – 25). This reads on the Applicant's claims that the substrate is an optical recording disk and further reads on the claim that assembly be further comprised of an elongated shaft with a tapered mandrel end portion to receive the substrate having a hole defined by an inner dimension edge of the substrate; a ball bushing disposed around the elongated shaft; and a ring portion disposed between the ball bushing and the embossing foil, wherein a thermal expansion to secure the ring portion to the embossing foil and to align a centerline of the embossing foil with a centerline of the substrate.

Therefore it would have been obvious to one of ordinary skill in the art to reconfigure the die of Nakano, et al. such that it incorporates the tapered shaft or boss of Amo such that the substrate and thin film are properly aligned with the dies, such that the disk is adequately imprinted or embossed.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakano, et al. in view of Ho, et al. and further in view of Bryja, et al. (U.S. 6,793,476). Nakano, et al. and Ho, et al. teach the characteristics previously described but do not teach that the die assembly is actuated via a gas bladder.

In a method to age or emboss bricks, Bryja, et al. teach the use of a conveyor system and a set of embossing devices (figure 1; column 4, lines 55 – 65). The

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embossing devices are comprised of a cap plate, an inflatable bladder, a die support and a die box (column 5, lines 5 – 25). The die support is actuated in a downwardly vertical position, such that the die box is pressed into the brick, effecting an aged or embossed texture to the brick (column 5, lines 30 – 35). The die is actuated by an inflatable bladder (item 56 – figure 3), which is connected to an air supply hose. The die is of conventional construction and as taught by Bryja, et al. has been previously used for effecting vibration isolation of machinery (column 5, lines 15 – 20). This reads on the Applicant's claim that there is a gas actuation bladder connected to the die assembly.

Therefore, it would have been obvious to one of ordinary skill in the art to configure the dies of Nakano, et al. to be actuated with an air inflatable bladder, as taught by Bryja, et al., for the purpose of actuating the dies and for effecting or absorbing the vibration of the moving dies such that the movement does not misalign the die and the substrate.

Claims 12 – 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakano, et al. in view of Ho, et al. and further in view of Spengler (U.S. 2003/0030188 A1). Nakano, et al. and Ho, et al. teach the characteristics previously described but do not teach the specific type of heat tunnel used.

In a method to heat a substrate or skin layer used for the production of automotive trim, Spengler teaches the use of a heat tunnel, such that the tunnel comprises an inductive heat tunnel (figure 1; paragraph 0039) and wherein the heat tunnel comprises an IR heat tunnel (figure 1; paragraph 0039). Thus, either type of

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heating is adequate for maintaining the substrate at the appropriate temperature to ensure hardening or curing does not set in.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to configure the heat tunnel of Ho, et al. such that it is either an IR or an inductive heat tunnel to adequately maintain the substrate at the appropriate embossing temperature.

Response to Arguments

17. Applicant's arguments filed November 20, 2006 have been fully considered but they are not persuasive, with respect to the reference of Fujii. Applicant has argued that Fujii do not teach that the pre-heater heats the entire embossable film; however, claim 1 only states that the *pre-heater heats the film, but does not specifically state the entire film is heated nor that the film is entirely exposed to the heater assembly*. Broadly interpreted, the assembly of Fujii heats and *is capable of heating the entire film*. Thus, the rejection with respect to the reference of Fujii has been maintained.

With respect to the reference of Spengler, Applicant has argued that Spengler does not teach a die assembly with an embossing foil. Examiner agrees and thus, the rejection has been withdrawn.

However, upon further consideration, a new grounds of rejection is also made in view of the references of Nakano, et al. and Ho, et al. It is known to one of ordinary skill in the art that a substrate with the top-most contact layer must be heated or pre-heated prior to embossing within a die assembly with an embossing foil or stamper. The heat is

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crucial to maintain the substrate's top layer at its embossing temperature, such that it does not cure; the heat allows the pattern carried by the stamper to be transferred to the substrate. If the substrate is not heated appropriately, it cures or hardens prematurely and the pattern is not adequately transferred from the stamper to the substrate. Thus, temperature maintenance is key, which Ho, et al. refer to in implementing the heating tunnel means such that the distance between the pre-heater and the die assembly need not be a factor, since in previous assemblies, alluded to by Ho, et al., pick and place mechanisms were crucial to transporting the substrate quickly, and thus, the pre-heater and die assembly were to be placed near each other. With the implementation of the heat tunnel, distance need not be a factor, since the temperature of the substrate is maintained. Furthermore, the indexing or transporting means of Ho, et al. are incorporated with the heat tunnel, such that further pick and place mechanisms or equipment become unnecessary.

Conclusion


18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Veronica D. Ewald whose telephone number is 571-272-8519. The examiner can normally be reached on M-F, 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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